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75th Anniversary GUIDE

On May 9, 1904, Cornell's School of Agriculture became the New York State College of Agriculture. It is that event and the ensuing 75 years of service to people that the College celebrates today.

CALS, No Longer A Man's World

If your daughter wants to attend the College of Agriculture and Life Sciences, don't be surprised. This year, about 45 percent of all applicants for admission are female, according to Dr. Leonard W. Feddema, director of admissions.

Women have historically shied away from the sciences because, until very recently, any interest they have shown has been discouraged," says Feddema, who speaks regularly in high schools throughout New York State in an effort to acquaint all students, male and female, with the opportunities the College offers.

"By talking to students, I have found that women were not only told it was unladylike to enter agriculture and related fields, but that there were no career possibilities to speak of. They would have to resign themselves to cleaning test-tubes while men did the 'important' work."

When women ask Feddema about the College, they are told of the many academic and career programs available. If they have the required qualifications, women are encouraged to apply and study toward degrees in all fields.

As a result, undergraduate and graduate women can now be found in all program areas in the College. In the areas of landscape architecture, food science, communication arts, and the biological sciences, the number of women matriculants actually exceeds that of men. Additionally, in the past five years, enrollment among women has mushroomed in agricultural engineering and in business management. Alumnae are finding jobs from which they have traditionally been excluded, such as county agents and members of government committees.

By and large, women who enter the College do exceedingly well, according to Feddema. "Men have always had the advantage in agriculture," he says, "because of the popular belief that the field requires lots of physical labor. In view of how women perform academically and professionally, this should present no barrier. As a matter of fact," Feddema concludes, "the only barrier now exists in women's minds."

Mann Library contains more than 450,000 volumes about agriculture, making it the second largest agriculture library in the world, next to that of the U.S. Department of Agriculture.

We're Number One!

The faculty of the College of Agriculture and Life Sciences is ranked first in the nation in agriculture and forestry, according to a recent survey published in the *Chronicle of Higher Education*.

The survey, conducted by Everett C. Ladd, Jr. and Seymour Martin Lipset, sampled a total of 4,000 faculty members at four-year colleges and universities across the nation. The respondents were asked to "name the five departments nationally in your discipline that have the most distinguished faculties."

Forty-two percent rated the College among the top five and 13 percent put it as their first choice. The University of Wisconsin at Madison was ranked second with 10 percent, and Iowa State University was third with 9 percent.

The Division of Biological Sciences at Cornell, whose faculty is composed largely of members of the College of Agriculture and Life Sciences, was rated eighth in the biology category of the survey and came in sixth as the respondents' top choice. This reflects the growing strength of the biological sciences at Cornell.

In addition, Cornell was ranked among the top five in chemistry, physics, engineering, and philosophy.

With the addition of the Boyce Thompson Institute for Plant Research to the campus, the College now has the largest concentration of plant scientists in the world.

AgPAC— A Valuable Link

Who are the students leading tours, directing visitors, and selling T-shirts? Many of them are members of the College of Agriculture and Life Sciences Positive Action Council (AgPAC) and volunteered to help the College celebrate its 75th birthday.

AgPAC is an organization of students representing academic departments, student organizations, student-faculty committees, and students-at-large of the College. They "act positively" to improve student life through a variety of projects. AgPAC also serves to increase interaction among students, faculty, and administrators.

Since its origination five years ago, AgPAC has grown in size, credibility, and effectiveness. AgPAC's accomplishments are a direct result of the members' enthusiasm and efforts and of the support from the College's Office of Instruction. For example, the "Alfalfa Room" in Warren Hall will be transformed this summer into a university unions facility with an information and storelike desk and new chairs and tables. Programs for the facility will be organized next fall by AgPAC.

Other activities include promoting the College and encouraging pride among students by selling T-shirts and buttons printed with the College seal and slogans like "We Grow the Ivy" and "I'm Proud to be an Aggie." AgPAC organizes Ag Day in the Memorial Room each spring. Educational exhibits, live animals, and free food products draw large crowds who leave with a better understanding of the importance of agriculture and the College.

AgPAC committees focus their efforts on particular projects identified by members or College staff. Course evaluations, academic calendar and student advisers are just a few of the areas of student life studied and acted upon. AgPAC is also involved in alumni and admissions activities of the College. Membership of AgPAC is over 80 students at present. Its future as an active organization of students serving the College is bright and growing brighter all the time.

Geneva Station Leading Apple Breeding Institute

by R. E. Krauss, *Geneva Experiment Station*

Since its inception in 1882, the New York State Agricultural Experiment Station at Geneva has had a large apple breeding program. Today, it is recognized as a leader in the development of high quality dessert and processing varieties. To date, the Station has named 56 new apple cultivars.

New York State produces approximately 22 million bushels of apples annually on more than 70,000 acres of land. The value of the raw product is estimated at $75 million. This is surpassed only by the State of Washington.

Breeding a new apple variety for cultivation is a long-term project, to say the least. Many thousands of seedlings from controlled crosses must be grown over a period of years. Unlike annual crops that can be evaluated every year, apples must be tested at much longer intervals.

Even after introduction, it is difficult for a new cultivar to gain commercial acceptance. It must first prove itself indisputably superior in many ways.

Four cultivars introduced by the Geneva Station deserve special mention. Empire was released for commercial planting in 1968. It is a medium-sized, dark red apple of excellent eating quality, and its fruits and trees closely resemble those of both McIntosh and Delicious.

Empire fruits are whitish-cream in color with a firm flesh that is very crisp, tender, juicy, and aromatic. It is the most widely planted apple in new orchards in New York State.

The Cortland is perhaps the most well-known apple ever developed at the Geneva Station. The fruits are large, ranging up to 3¼ inches in diameter. Skin color is 90 percent red.

Because the fruit flesh does not turn brown, Cortland is a favorite salad ingredient.

The third cultivar, Jonamac, originated from a McIntosh and Jonathan cross made in 1944 and was introduced by the Geneva Station in 1972. It was selected in 1955 from a population of 2,474 seedlings.

Jonamac is an early fall dessert apple that has a very atttractive dark red blush, usually with a small amount of striping. Eating quality is considered very good, superior to McIntosh.

Like most crops, apples are extremely sensitive to damage by insects and diseases. Years ago, the Geneva Station began a special apple breeding program to develop new cultivars that are highly tolerant to the most devastating of the apple diseases, apple scab. More diseases were included as the program progressed.

It was, therefore, with considerable pride that we announced the introduction of the Liberty apple in September. It is either resistant or tolerant to four of the major diseases affecting apples. It is thought that during all but the most severe growing conditions, no chemical sprays will be needed to protect this apple.

The flesh of the Liberty is yellowish, crisp, and juicy, and the flavor is good.

This is the first in a series of disease-resistant varieties that the Station will introduce. Some commercial nurseries will have Liberty trees available early next year.

The insect collection in Comstock Hall contains more than 4,000,000 specimens, making it one of the largest university insect collections in the world.

N.Y.S. College of Agriculture and Life Sciences at Cornell

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A Conclave Agricultural

By C.S. Wilson, '04

From *The Cornell Countryman*, June 1904

About eight o'clock on the evening of May ninth every agricultural student in Cornell University paused in the midst of his work and listened to the blowing from the signal station. The next moment he had thrown aside his books and was making for the armory at breakneck speed. This signal was the public announcement that the Stewart-Monroe Agricultural bill had been signed by the governor.

The students had previously arranged that as soon as the bill received the governor's signature the fact should be made known to all by a certain signal. Each was then to come to the armory and assist in firing the governor's salute from the cannon. For several days the students had eagerly waited for this signal and now were ready to respond. Within a few minutes a large number of them had gathered at the armory and were busily engaged in firing the governor's salute of seventeen guns. By this time their ranks had increased to nearly 1,200. Not alone were these agricultural students. Students from all the colleges came out to join them in their rejoicing. From the armory they proceeded in a body to visit the professors concerned and, as is customary for college students, demand a speech from each. A bull was procured from the barn to lead the procession. In this manner the students called upon President Schurman, Professors Bailey and Craig, and Senator Stewart. The next morning the following report came out from the Associated Press:

Ithaca, May 9. — When word reached Ithaca to-night that Governor Odell had signed the State Agricultural College bill, appropriating $250,000 for the erection of a college of agriculture on the Cornell campus, it was the signal for a demonstration in which over 2,000 students took part.

The big guns in the university armory were wheeled out and over a hundred rounds of ammunition were fired.

In the meantime the students were drawn up in a column, and headed by the university band and by six black bulls from the university farm, marched to the residence of Director Bailey, who was called out for a speech.

Isaac P. Roberts, first professor of Agriculture at Cornell

If the bill should be signed by the governor, the students had desired to make known their appreciation of the fact by a general celebration, a celebration in which the agricultural leaders of the state who had worked so persistently and faithfully for the passage of the bill might take part. This appropriation was not for Cornell University alone. It was for a State Agricultural College to be built at Cornell, an agricultural college for the interests of the people of the state. With this thought in view the students asked the agricultural faculty, some of the agricultural leaders of the state, and the political supporters of the bill to join with them in a general celebration which should be held as soon as possible after the bill received the governor's approval. The students petitioned the faculty for a holiday which was readily granted.

As mentioned above the news of the signing of the bill came about eight o'clock on Monday night. The following Thursday was chosen for the holiday and celebration. But three days were left for preparation, and yet, when Thursday came, all was in readiness. Every agricultural student had been given something to do and everyone proved true to his duty. Each knew the place assigned to him and stood ready to act.

The celebration began at 6:45 p.m. For five or ten minutes every whistle in the city blew, the church bells rang, and everything capable of making a noise "let loose." As the echoes from this medley of sound were dying away the parade began from the barn. In the lead was the cadet band. Then came a body of agricultural students all of whom wore straw hats. Following this came farm implements of all descriptions, the different breeds of livestock, and floats representing different phases of the college of agriculture.

The entomological float came first. On this the students were busily occupied in the study of insects. Now and then one would thrust out his net to catch something and then eagerly display the catch to his fellow students.

The horticultural float contained a large number of plants. Here the students were busy making cuttings, potting plants, and general greenhouse work. Two sprayers were represented in the parade. On one of these was attached a placard which read, "Let Us S'pray."

An interesting feature of the parade was the international float. In this were the students in the college of agriculture representing different countries of the world, twelve in all. Each carried his national emblem.

The "Six Black Bulls," which had taken part the Monday night previous, had become quite famous by this time.... Other livestock was represented in the float. An amusing feature of the parade was "Mary's Little Lamb." A boy, dressed as a woman, was leading a lamb upon the back of which was a placard with the word "Mary's."

The poultry float came last. On the front of this was a large rooster, ten or twelve feet high, hitched to a chariot. Written on the side of the float were these words: "The youngest chicken in the college; I'll be bigger when I get my growth." This was one of Rice's Bantams.

After the parade came the bonfire and fireworks. Fully 5,000 people gathered on the slope west of the library to witness these. The bonfire was the biggest ever seen in Ithaca. While it was burning the chimes played from the library tower, imparting to the occasion an impressiveness and inspiration which was enjoyed by all. The fireworks began as the bonfire was dying down. It was a grand display, ending with a large set-piece of brilliantly colored initials, "N.Y.AGR."

About nine o'clock the agricultural college with the guests retired to the armory for the banquet. The room was prettily decorated and the tables arranged to form the letters "C.U." There were several unique features connected with the banquet. Absolutely everything served here came from the University farm. The poultry department furnished chickens and eggs; the animal industry department, beef and pigs; the horticultural department, lettuce, radishes, strawberries, etc.; and the dairy department, cheese, milk, and cream. Wheat from the farm was ground into flour and then made into bread. Some was also roasted and used for coffee.

A boiled egg was placed at each plate. On each was the stamp of the agricultural college, so familiar to every student, "Approved, L. H. Bailey, Director." In addition to the above a verse was inscribed upon each. One of these verses was:

Laid on the farm,
Brooded over for years,
Hatched in Albany.

The plan of serving was as near as possible like that in the home. Each table was presided over by the wife of a faculty member or guest. The meat, potatoes, salad and coffee were served in the same manner as at home around the family table.

About eleven o'clock, President Schurman opened the speaking. The toastmaster was H. E. Cook, chairman of the committee for the promotion of agricultural interests in New York State and whose efforts in behalf of the bill had been untiring. The program, unique in itself, was as follows:

Our Legislators
C. E. Treman
Responses
Senator Stewart
Assemblyman Monroe
Our Educators
A. R. Mann
Responses
President Schurman
Professor Durand
Director Bailey
Our Coadjutors
A. W. Litchard
Responses
Master E. B. Norris
Director Jordan
Our Editors
B. G. Smith
Responses
W. G. Johnson
G. M. Tucker
Our Supporters
Professor J. H. Comstock
Responses
T. B. Wilson
John Hall
H. E. Cook

Among the songs were the following by Mrs. A. B. Comstock, the second of which was composed for the occasion:

The Old Farm At Cornell
Air—"Music in the Air"

When dawn her bowstring drew
When her brightest arrows fell
They touched the meadows green
That surround our fair Cornell.
Hovering rains blew gently o'er,
Winds their secrets love to tell
To the grass and bending grain
On the old farm at Cornell.

'Tis land that tells the world
How to mine the depths below
And change the buried gold
Into Harvest's ruby glow.
Great the power of brain with brawn!
You have taught the lesson well,
And your sons will think and work
Though they're far from you, Cornell.

Oft golden harvests store
You have reaped from hill and dell;
A store of royal love
You have reaped from us Cornell.
You have given our hearts new warmth
And our hands new strength can tell—
While both hearts and hands shall show
Truest faith in you, Cornell.

Our Song of Victory
Air—"Marching Through Georgia"

Sing the old farm at Cornell,
It makes a glorious song
Sing it with a spirit fair
It helped the world along.
It builded our foundations and
It made them good and strong.
From it we reaped our fair victory.

Chorus
Cornell! Cornell!
'Tis a glorious place to be,
Cornell! Cornell!
With a schoolhouse fit to see
Sing it loud and clear boys,
for the farmers yet to be,
Singing to-night of our victory.

Sing the new farm at Cornell,
for a new song we must sing,
Where'er the plow share cuts the soil,
there shall our voices ring.
Farmer boys from all the world
we will to Cornell bring,
Joining our chorus of victory.

Chorus

Sing the old and new Cornell,
together they shall stand,
For tilling soil and making men
the greatest in the land.
Every farm in New York State
shall take or lend a hand,
Helping us reap our fair victory.

Chorus.

The banquet closed with the presentation of a loving cup to Director Bailey. This came from the students as a token of their love and esteem.

And what does all this signify? Does it mean merely that Cornell is to have a new Hall of Agriculture? No, it stands for more than this. It means that the farmers of New York State are to have a larger and more comprehensive agricultural college, a college through which agricultural interests shall be awakened, agricultural knowledge disseminated, and the farmers of the state brought into closer relations. Through the influence and inspiration radiating from this college year after year and embodying, as it shall, the highest aims and ideals, New York will become the foremost state in agriculture, and well worthy of the name—"Empire State."

The Liberty Hyde Bailey Hortorium, located in Mann Library, is the world's leading center for the study of the palms, a plant family second only to grasses in its economic importance.

George F. Warren and his associates in the Department of Agricultural Economics pioneered in the systematic study of farms as business enterprises.

Liberty H. Bailey

Research done in the Department of Poultry Science with chickens, turkeys, ducks, quail, and game birds has led to the discovery of many of the vitamins, trace elements, and minerals essential to human health.

Provost Keith Kennedy, former dean, presents Dean David Call with the director's hat. Isaac Roberts started the tradition of passing the hat from dean to dean.

The Deans			
Isaac P. Roberts	1874-1903	Carl E. Ladd	1931-1943
Liberty H. Bailey	1903-1913	William I. Myers	1943-1959
Beverly T. Galloway	1914-1916	Charles E. Palm	1959-1972
Albert R. Mann	1917-1931	W. Keith Kennedy	1972-1978
		David L. Call	1978-

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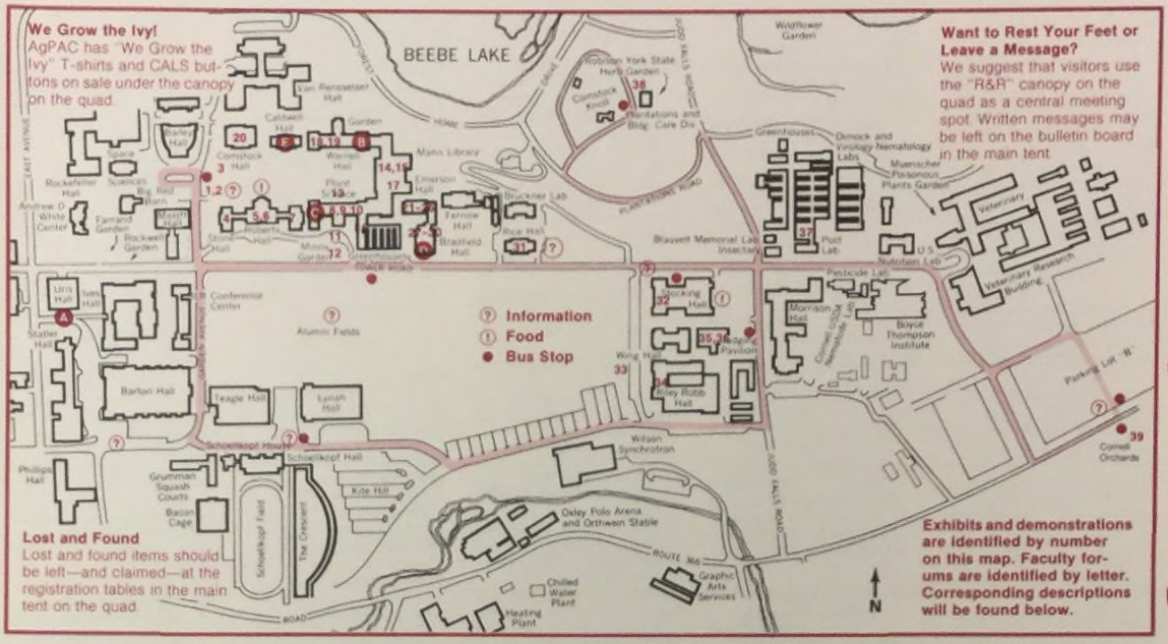

You'll be able to take in most of today's activities by walking from building to building; however, special bus service is provided to and from campus parking areas and to outlying activity centers. Buses through the CALS campus will run every 15 minutes.

Separate bus service is provided at the Plantations and to the Animal Science Teaching and Research Center in Harford. See the appropriate departmental listings below for details.

Members of the ALS Positive Action Council are circulating throughout the campus today, ready to answer questions, give directions, and guide you to or through exhibits. You can identify them by their smiling faces and their bright gold T-shirts with the "We Grow the Ivy" insignia.

Food!
The Dairy Bar is open today from 9-3:30. Breakfast served from 9-10:30; full lunches from 10:30-3. Snacks available all day. Carryout service available. Members of the Dairy Science Club are serving hot dogs, hamburgers, and beverages on the Ag Quad.

Watch for these directional signs as you tour the campus. They indicate times of demonstrations, locations of exhibits, and bus stops.

1 Welcome to Our Birthday Party!
Main Tent, Ag Quad
Today the New York State College of Agriculture and Life Sciences celebrates the 75th anniversary of its establishment. Visitors are asked to register at the main tent on the quad. At the tent you can obtain a program containing interesting articles about the College, yesterday and today, and a list of special exhibits and demonstrations arranged especially for our birthday party. Tours of the exhibits can be self-guided, or you can arrange to tour the buildings and exhibits with a student guide.

2 A History of the College (AgPAC)
Main Tent, Ag Quad
The ALS Positive Action Council (AgPAC) presents a history of the College of Agriculture in words, pictures, and memorabilia. Included in the display are the pen used by Governor Odell in 1904 to sign the Stewart-Monroe Bill that established the state college (the anniversary we celebrate today); the plow used by Liberty Hyde Bailey to break ground for the buildings funded by the 1904 act; James B. Sumner's Nobel citation; and the Dean's Hat.

3 Prospective Students Take Note!
Canopy, Ag Quad
Roberts 131
Interested in applying or transferring to the College of Agriculture and Life Sciences? Stop by the canopy on the quad and talk to current students and admissions counselors, and attend a special program planned just for you at 11:30 in Roberts 131.

4 Agricultural Education Today (Agricultural Education) ***Stone 7***
Short talks on the place of agricultural, science, and environmental education in schools and in society. Demonstrations of teaching methods. Optional guided nature walks of the college campus.

5 The International World of CALS (International Agriculture)
Lobby of Roberts
This display shows how CALS students and New York State residents can learn more about the food problems and prospects of the less developed world in relation to U.S. agriculture. Literature about the courses, seminars, academic programs, and outreach activities of the program is available.

6 The Diverse World of Biology (Biological Sciences)
Third Floor of Roberts
One of the greatest strengths of biology at Cornell is its diversity. This exhibit, utilizing live animals and plants, emphasizes the Division of Biological Sciences' role in providing fundamental tools of research and instruction in the wide-ranging basic biological sciences: biochemistry, marine biology, plant and animal ecology, plant growth, and animal physiology. Youngsters shouldn't miss the fascinating Parade of Kingdoms.

7 What Is a Landscape Architect? (Floriculture and Ornamental Horticulture) ***East Roberts 4***
Graphic and slide displays represent various aspects of student work completed within the program, including basic design theory, site analysis and development, urban and rural studies, and planting design.

8 A History of the Department of Floriculture and Ornamental Horticulture
Plant Science 26
During the past 75 years, this department has become a composite of many horticultural and environmental disciplines. The exhibit depicts the objectives and programs of the department and the heritage from which they evolved.

9 Creating with Flowers (Floriculture and Ornamental Horticulture)
Plant Science 22, 32-34
Students demonstrate their talents through displays of flower arranging materials and methods. Fresh designs will be made up throughout the day. And don't miss the department's living garden of foliage and flowering plants.

10 Gardening for Everyone (Floriculture and Ornamental Horticulture; Cooperative Extension)
Plant Science 37
See videotaped news reports and interviews illustrating the impact of Cooperative Extension's Urban Gardening Program on the lives of low-income New York City residents. Find out about the Master Gardener program, and make sure the young set has an opportunity to meet the talking plant. Gardening experts are on hand to answer your questions. Cooperative Extension bulletins available.

11 Stop at the Dream Machine (4-H)
Tower Road side of Plant Science
The Broome County 4-H Dream Machine travels throughout the city of Binghamton to provide practical, after-school learning activities not usually offered in school to youth 8-19 years of age. Programs offered include girls' self-awareness (for ages 12-16), folklore, a newspaper and creative writing program, plus nutrition, metrics, first aid, woodworking, health, and much, much more.

12 A Thing of Beauty—Miss Minns' Gardens (Floriculture and Ornamental Horticulture)
Tower Road side of Plant Science
A springtime visit to Cornell isn't complete until you've enjoyed the spectacular show of colorful flowering bulbs in this very special garden.

13 How Does *Your* Garden Grow? (Vegetable Crops)
Foyer of Plant Science; Rooms 141, 143
Whether you live in the city or country, are a commercial grower or hobbyist, these exhibits have something for you. Included are demonstrations on the cultivation of many types and varieties of vegetables (try some free samples!) and information on weed control, vegetable storage, and plant growth regulators. Slide shows throughout the day on home gardening, the use of black mulch, hydroponics, and the department's contributions to the state's vegetable industry.

14 Turn-of-the-Century Farm Life (Mann Library)
Lobby of Mann Library
Cornell, regional, and national publications illustrate the agricultural situation and life on New York State farms in 1904.

15 The Art of Communication (Communication Arts)
First Floor of Mann Library
An opportunity for visitors to learn about this department's specialized courses, areas of research, and how a modern video laboratory operates. Guests are invited to videotape their reactions to the day's activities. Historical display of the *Cornell Countryman*.

Tour the Liberty Hyde Bailey Hortorium and Conservatory

16 ***Tower Road side of Plant Science***
Tropical and exotic plants are thriving in the Conservatory of the Bailey Hortorium. Browse through the greenery.

17 ***Fourth Floor of Mann Library***
Tour the Hortorium itself for more information about Liberty Hyde Bailey and for displays of one of the largest collections of cultivated plants in the world. View a film that shows the inner workings of a palm stem, and see demonstrations of the art of pressing and drying plant specimens.

18 Talk to a Computer; Learn About Environmental Issues in Your Home Town (Rural Sociology) ***Warren 32***
Guests are invited to a hands-on demonstration of a computer terminal. "Talk" to the computer and retrieve

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important statistical information about New York State counties.
View a 30-minute slide-tape discussion of the whys and wherefores of citizen participation in environmental planning. Use this opportunity to learn what's being done in selected areas of the state to help solve important environmental problems.

19 Agricultural Economics and the Consumer (Agricultural Economics)
Warren 101
Learn about the evolution of farm cost-accounting and how this department has affected worldwide agricultural finance, and look for the Food Industry Home Study Program exhibit. This program, which reaches supermarket managers throughout North America, is helping to make for more efficient food product management and, perhaps, for more stable costs.

20 The Fascinating World of Insects (Entomology)
Main Floor of Comstock
Delight in the ancient, fragile grace of the butterfly; be intrigued by the sophistication of a computer-based pest-management system—this is the broad range of interests awaiting you in the Hall of John Henry Comstock. See our colors, play our game, taste our honey, sing our song. In the classrooms, laboratory, and foyer are preserved beauties and mini-monsters. INSECTS!

21 A Living Trout Stream! (Natural Resources)
Patio of Emerson
Your eyes aren't deceiving you; that is a real, stocked trout stream on the patio of Emerson! Learn about the dynamics and management of Adirondack fish populations and why hybrid trout strains are superior to domestic and wild strains.

22 Healthy Crops Don't Just Happen (Plant Pathology)
Foyer of Emerson
This exhibit reflects Plant Pathology's contributions to healthy plants. Demonstrated today is the department's work with potatoes: production of disease-resistant cultivars and pathogen-free nuclear seed stocks; golden nematode research; and potato-pest management.

23 Cakes, Cookies, and Cornell (Plant Breeding and Biometry)
Foyer of Emerson
Cornell has developed the superior strains of wheat most often used to make pastry flour. Seeds and plants of these grains, as well as the hardy varieties of cereal grains, potatoes, alfalfa, cucumbers, and dry beans, developed here are on display. Look, too, for an exhibit of rice seedlings regenerated through tissue culture. Bulletins, pictures, and laboratory and field equipment dating from the early days of the department illustrate the evolution of instruction and research in the plant sciences.

Soils! Soils! Soils! (Agronomy)

24 Soils of New York
Emerson 135
Soil monoliths and maps showing soil varieties and farmlands in New York State. A slide show on how a soil map is made and what soil properties affect land use will be shown at 11, noon, 1, and 2.

25 Tropical Soils and Food Production
Emerson 135
Illustrations of methods used to evaluate the suitability of tropical soils for food production. Examples of soil sections demonstrate the process of soil degradation.

26 The Freeze-Thaw Cycle of Plant Cells
Emerson 135
A super-sophisticated electronic microscope equipped with a video recording system allows you to directly observe the complex responses of plant cells to freezing and thawing.

27 What Kind of Soil Is That? ***Bradfield 104***
Visit a typical laboratory used for identifying and learning about soils. See demonstrations of student-conducted experiments.

28 Tour the State Soil-Testing Laboratory
Bradfield 805
Demonstrations of modern, semiautomated laboratory equipment and procedures used to test soils. Thirty-minute tours begin at 11, noon, 1, and 2.

29 Soils as a Source of Laughing Gas?
Bradfield 913
It is possible that modern agriculture may cause the atmospheric level of nitrous oxide (laughing gas) to increase and thereby lead to partial destruction of the earth's protective ozone shield. Fifteen-minute demonstrations illustrating how nitrous oxide from soils is collected and analyzed will be conducted at 10:30, 11:30, 12:30, and 1:30.

30 Understanding the Weather (Atmospheric Sciences)
Eleventh Floor of Bradfield
Tour the laboratory and teaching facilities and learn how computers, radar, and other specialized research equipment are used to provide the public with up-to-the-minute weather forecasts. A film, in time-lapse sequences, of clouds and severe weather phenomena will be shown every half hour.

31 Meet Egg-bert, the Talking Egg (Poultry Science)
First Floor of Rice and Rooms 101, 201, 300
Youngsters, especially, will enjoy talking with Egg-bert, and visitors of all ages will enjoy demonstrations of chromosomes, poultry surgery, and poultry and egg cookery. Learn how an egg develops and discover the effects of poultry nutrition. Continuous showings of films in the Poultry Playhouse, Room 300.

32 Food for Thought (Food Science)
Lobby of Stocking
Highlights of the importance of the food industry in New York State and the contributions to the industry by the department's faculty and students. See typical New York State foods being processed. Free samples! Ask questions about today's foods and learn about career opportunities in this exciting field.

33 Farm Implements and Machinery: 75 Years of Progress (Agricultural Engineering) ***Wing Drive***
The progression of farm power developments, from hand tools, oxen, and draft horses to steam engines and modern tractors. A fascinating instructional exhibit for adults and children.

34 Agricultural Engineers at Work
First Floor, Riley-Robb
Learn about the role and activities of agricultural engineers through exhibits on energy, land treatment, computers, 4-H, Cooperative Extension, teaching, and research. Don't miss the rare model-plow exhibit.

35 Wholly Cow! (Animal Science)
Livestock Pavilion
The pavilion teems today with cows, swine, sheep, horses, and goats. Learn about the dairy cow: its reproductive system, how it secretes and ejects milk, and how it digests feed. The Dairy Science Club invites you to a cow-milking demonstration. Invitation valid as long as the supply lasts!
Don't miss the wide-ranging demonstrations, films, and videotapes about heart function and circulation, livestock management and production, and a new meat-tenderizing process. Each demonstration will be presented once between 10:30 and 12:30 and again between 12:30 and 2:30. Pick up a complete program of events and exhibits at the pavilion entrance.

36 Bus Tours to the Animal Science Teaching and Research Center
Take a walking tour of the modern dairy cattle research facility in Harford and observe various housing arrangements, manure-handling and milking systems, and the maternity ward. Learn about current nutritional and methane research and dairy extension services, and watch a demonstration of computer-assisted dairy-herd management.
In order to prepare you for the tour and to answer questions, a guide will accompany you to Harford and will return with you to Ithaca. A tour of the T&R center, including travel, takes two hours.
Buses for Harford leave from the Ag Quad at 10:10 and from the Livestock Pavilion at 10:15, 11:15, 12:15, and 1:15.

37 A Greenhouse of Florist and Nursery Crops (Floriculture and Ornamental Horticulture)
Kenneth Post Laboratory Judd Falls and Tower Roads
See crops propagated by tissue culture and energy-efficient foliar and soil nutrition of these crops. Also see new crop production systems, roses grown under a new high-intensity lighting system, and learn about energy conservation and solar heating in greenhouses. Of special interest to commercial florists and nursery operators.

38 The Cornell Plantations Are Inviting . . . .
And you're invited to take a guided walking or bus tour through the arboretum, the test gardens, the old pasturelands, and the wildflower and herb gardens. Bus transportation from the Ag Quad to the Plantations' central office is available.

39 Walk Through the Orchards (Pomology)
Cornell Orchards
Visit the orchard laboratory on Route 366 and learn about research being conducted on fruit crops. (If Mother Nature has cooperated, the apple trees are in blossom today.) Apple salesroom open. Bus transportation available from the Ag Quad.

The Cornell Chimes
Throughout this day of celebration you'll hear the lovely sound of the Cornell chimes. McGraw Tower, Cornell's most famous landmark, is open today from 10 a.m. to 7 p.m. You're invited to climb the 162 steps, see the chimes, and talk with the chimesmasters. They'll even serve you refreshments and play your special requests!

Faculty Forums

A special feature of today's celebration is a timely series of faculty forums. The forums address the ever-present and ever-growing goal of the College: Service to the people of New York State.

1:30–3:00 p.m.

A Prices, Productivity and Politics: What's Ahead for Agriculture?
Uris Auditorium
The panel, from the Department of Agricultural Economics, will be moderated by Olan D. Forker, professor of marketing and department chairman. Kenneth L. Robinson, Liberty Hyde Bailey professor of agricultural economics, will discuss the impact of inflation, declining productivity, and energy shortages; Max E. Brunk, professor of marketing, will discuss changes in market organization and activities associated with rising costs and public regulation; and George J. Conneman, professor of farm business management, will discuss changes in farm production over the next 25 years, including changes in capital, labor, land use, and management. Alfred E. Kahn, President Carter's chief inflation fighter, has been invited to join the panel.

3:30–5:00 p.m. Serving the People Through Science and Education

B Contributions to Dairy and Poultry Production
Warren 45
Robert J. Young, professor and chairman of the Department of Animal Science, will moderate the forum. Forum participants will include Milton L. Scott, Jacob Gould Schurman professor of animal nutrition and chairman, Department of Poultry Science, who will describe the impact of poultry nutrition research on the quality and economy of living, and Professors Robert H. Foote and Richard G. Warner, Department of Animal Science, who will discuss contributions from dairy production research to the producer and the consumer over the past 75 years and possible changes in the next 25 years.

C Milestones in Plant Science—Impact on Agriculture and Benefits to People
Plant Science 233
The panel will be moderated by Walter J. Kender, professor of pomology and head, Department of Pomology and Viticulture, Geneva, and chairman of the Department of Pomology, Ithaca. Durward F. Bateman, professor and chairman, Department of Plant Pathology, will discuss the background and history of the plant sciences and will identify the benefits that have occurred during the past 75 years. Vernon E. Gracen, associate professor, Department of Plant Breeding and Biometry, will analyze contemporary concerns, pertinent areas of current research, and recent research results that affect agriculture and the consumer. Edward H. Smith, professor and chairman, Department of Entomology, will describe future trends in the plant sciences and their benefits.

D The Impact of Food Science and Marketing
Bradfield 101
Willard B. Robinson, head of the Institute of Food Science and professor and head, Department of Food Science and Technology, Geneva, will moderate the panel and discuss changes in the fruit, vegetable, and wine industries that have resulted from the activities of the college. John E. Kinsella, professor and chairman, Department of Food Science, and associate head of the Institute of Food Science, will place the topic in historical perspective and identify benefits that have occurred. David K. Bandler, assistant professor, Department of Food Science, will describe contributions from dairy science that have benefited consumers; and Wendell G. Earle, professor of marketing emeritus, Department of Agricultural Economics, will analyze food-marketing perspectives over the past 75 years and potential changes in the next 25. Robert C. Baker, professor of food science, Department of Poultry Science, will conclude the forum with a discussion of future trends in food science and marketing that will affect agriculture and consumers.

E *Changes in Communities and Institutions: The First 75 Years, the Next 25*
Caldwell 100
Gordon J. Cummings, professor, Department of Rural Sociology, will discuss changes in the population and the delivery of services; Frederick H. Stutz, professor of history of education emeritus, Department of Education, will examine changes in rural schools, 2-year colleges, and cooperative educational services and their impact upon the public; and Howard E. Conklin, professor of land economics, Department of Agricultural Economics, will analyze changes in land use, the impact of agricultural districts, and future possibilities in land-use control and taxation. The forum will be moderated by Professor Russell D. Martin, Department of Communication Arts.

Students Conduct Field Research in Beginning Biology Course

Biology 101 is one of the most widely attended courses in the College of Agriculture and Life Sciences. It is not only for prospective biology majors but also for aspiring scientists throughout the University. Yet, despite its enrollment of almost 850, "Introduction to Biology" not only exposes students to cells, molecules, and amino acids but also gives them practical research experience in the lab and in the field.

One reason for its depth is certainly that the lecture portion of the course is taught by William T. Keeton, Liberty Hyde Bailey Professor of Neurobiology and Behavior, and author of one of the most widely used biology textbooks, *Biological Science*. But much of the credit must also go to J. C. Glase, senior lecturer and lab coordinator, who sees to it that his students are well acquainted with research methods.

"Most students don't realize how tedious scientific experimentation can be," says Glase, who has developed the lab text and supervises the 23 teaching assistants taking part in the course. "Our object is to teach what scientific method is and also what it isn't."

Right from the beginning, Glase and assistant lab coordinator Dick Ecklund require students to participate in full-fledged research projects. They group themselves into small teams and are provided with a subject to explore. They then try to make observations about it.

At this point the beginning biologists come up with questions they would like to answer through research and make a list of equipment they need to proceed. The next step is actually to do the study and analyze the data. Then they are asked to write a summary of their findings.

After completing many such projects, Glase's students are ready to be sprung from the confines of the lab. Come spring, they select a subject within the general area of ecology or behavior, go individually or in groups to one of the rich natural laboratories in or around Ithaca, and begin to exercise their newly acquired investigative skills.

Research ranges from studying the nesting habits of the gray squirrel to observing the frequency and sequencing of courtship displays in the mallard duck. Each project is described in detail in a final report that adheres to standard scientific format.

Some of the best of these are selected by Glase and his staff for publication in an "in-house" journal. "The whole process of observation, experimentation, reporting, and writing for publication not only exposes students to the rigors of science but also prepares them for the upper-level courses they will take in the future," Glase explains. "It is hoped that some of these reports will be the basis for additional behavior/ecology studies."

One student, Susan Sörenyi-Sander, chose to study the compass orientation of pileated woodpecker feeding holes. She observed a total of 102 holes in 39 different trees and determined what part of the trees were favored for winter feeding. It was found that most holes are located on the south side at an average height of six meters.

As elementary as this research may seem, a study of this kind had never been done before. Sörenyi-Sander's complete findings are now being considered for publication in *The Wilson Bulletin*, a respected ornithology journal.

Biology 101 is taken by students who plan to major in science. There is no doubt that, with the comprehensive lectures and the challenging research, they are getting the training they will need. "Our main objective in this course is to teach not only the prospects of science but the process of science as well," Glase says.

Agricultural Research... A Sound Investment

In the year 1900 there were 15,054,000 apple trees in the commercial orchards of New York State. They yielded 24.1 million bushels, an average of 1.6 bushels per tree. Seventy-five years later, N.Y.S. apple trees were still yielding the same 24 million bushels. But, largely because of this College's research into improved orchard management, production per tree had risen 319 percent. In 1975, 3,550,000 trees yielded an average of 6.7 bushels per tree.

Research has played an important part in the increases in agricultural production reflected in this table. These advances would not have been possible, however, without New York's efficient Cooperative Extension network that disseminates information gleaned from the research to growers in every corner of the state. The progress is also attributable to the cooperation of farmers statewide.

Program	*Total cost of development at Cornell*	*Annual return to industry and the consumer*
Seeking more efficient and reliable ways to artificially inseminate dairy cattle	$2,100,000 over 25 years	$100 million — 9¢ savings per quart of milk
Alfalfa variety development and management	$2,310,000 over 22 years	$35,100,000
Wheat variety development and management	$1,600,000 over 40 years ($40,000 per year)	$234,000
Development of a mechanical grape harvester	$640,000	$1.2 million savings in labor
Development of the double trellis grape	$108,000	$1.2 million worth of grapes

International Agriculture at Cornell

by L. W. Zuidema
Assistant Director, Program in International Agriculture

The College's focus on agricultural and rural development in the Third World was organized in 1963 with the establishment of what is now called the Program in International Agriculture. At that time, the Director of International Agriculture, Kenneth L. Turk, worked with the faculty to develop an on-campus program for students interested in the agriculture of the developing regions of the world.

In the 16 years since its inception, this project has continued to grow in response to changing circumstances and educational directions. Now it encompasses a wide range of teaching, research, and extension activities.

Today, it is possible for CALS students to choose from more than 40 courses dealing with international agriculture and rural development. Several seminar series, films, and special short courses help keep students informed about current issues and developments abroad, particularly in Third World countries where problems are often serious and complex.

Those working toward advanced degrees can find many research opportunities by participation in research projects in international agriculture already in existence. There are also new projects being established with international and national research organizations in the developing countries. Last year, about 60 College graduate students gathered data for their dissertations in Third World nations.

A portion of the research effort at the College of Agriculture and Life Sciences is also devoted to problems relating to the agriculture of the developing world. Organizations funding this research include the U.S. Agency for International Development (AID), the National Science Foundation, the Ford and the Rockefeller Foundations, United Nations agencies, The World Bank, foreign governments, and international agriculture research centers also contribute.

Recently, the College has had major research commitments in the areas of tropical soils, diseases and pests, plant breeding for crops grown in the tropics, water resources management, technical change and income distribution, and nutrition in developing countries.

Interdisciplinary research efforts are receiving increased attention. Six students from six disciplines recently completed their Ph.D. degrees after working together at CIMMYT, the International Maize and Wheat Improvement Center in Mexico, on separate studies dealing with corn varieties suitable for farmers in the tropics.

An interdisciplinary group of several faculty and graduate students is currently involved in a research project, in cooperation with the Inter-American Institute for Agricultural Sciences, which focuses on methods of meeting the needs of small farmers in the mountainous regions of Ecuador.

Recent federal legislation holds much promise for an increase in funding for research projects that will benefit farmers in the developing world. Title XII of the Foreign Assistance Act, passed in 1975, has defined a new relationship between major American agricultural universities and U.S. AID. Funds are now becoming available for collaborative research between U.S. universities and institutions abroad. For the next five years we will receive a strengthening grant for increasing the internal capacity of the College to respond to international agriculture and rural development problems.

Apart from the broadening effect on faculty and students at Cornell, some of our international research has helped agriculture in New York State and the U.S. in general. For example, disease- and insect-resistant genetic materials from abroad have been incorporated into newly released varieties of potatoes, corn, and beans.

Other benefits include the development and application to New York State of new methodologies in soil research, the enhancement of rural development research, and the development of food processing techniques.

In order to help students and the general public acquire a better understanding of the world food situation, the Program in International Agriculture has recently been expanded through a three-year grant from the U.S. Office of Education, HEW. A Center for the Analysis of World Food Issues (CAWFI) has been established. This serves to improve our study opportunities on campus and to initiate an outreach program dealing with the international food situation.

Currently, CAWFI is assisting several small liberal arts colleges in the area with their courses dealing with world famine. To widen this effort, a series of papers on world food issues will soon be published for the use of schools and community groups.

Recently, a Cornell speakers' bureau on world food issues was established. A brochure containing information on 35 members of the College faculty who are willing to speak to individuals and groups is now available. A complementary outreach activity of the College is the Program on Food Policy in Cooperative Extension.

The Program in International Agriculture seeks to broaden the understanding of both faculty and students through instruction and research. It also strives to share its findings beyond the borders of the University. Constant efforts are made to provide a stimulating environment for students who will make important decisions in the future regarding food, one of our basic needs.

The first Department of Entomology in the nation was organized at Cornell by J.H. Comstock in 1872.

75th Anniversary

Integrated Pest Management Gives Farmers A Scientific Edge

An apple a day may keep the doctor away. But if enough of those apples have worms inside, the economic health of hundreds of fruit farmers will suffer.

The job of keeping apples pest-free requires constant attention through intensive management. This means careful monitoring of the entire orchard plus the judicious use of chemical pesticides.

For some time, researchers at Cornell and many other institutions have been seeking methods to help farmers develop and maintain a scientific approach to pest control. These programs took a great leap forward in 1973 when the U.S. Department of Agriculture gave seed money to about 20 states to establish concentrated pest management systems.

This funding enabled scientists from many disciplines within the College of Agriculture and Life Sciences and the New York State Agricultural Experiment Station at Geneva to put their heads together and develop a pest management system that could be shared with growers statewide through Cooperative Extension.

Now, for example, College entomologists study insect biology and the effects of pesticides, while plant pathologists look into plant diseases and the effects certain sprays have on them. Chemists try to find ways to synthesize compounds that attract and trap insects before they can do any damage, and atmospheric scientists research weather patterns to see how they affect the life cycle of pests.

Even computer scientists play a part in this project by devising computer programs to store and release the great volume of data for the use of county agents. "The challenge of Integrated Pest Management has been to assemble as many pertinent facts as possible, analyze those facts, and render them back to growers so that they can make intelligent, day-to-day decisions concerning crop protection," says James P. Tette, project manager.

The first Integrated Pest Management (IPM) project in New York State was directed toward apples, the state's most important fruit crop.

"The main purpose of our program is to arrive at more efficiency in pest management," says Tette, who is also a research associate in the Department of Entomology. "We are not trying to eliminate the use of pesticides completely, because there is no doubt that they are a valuable tool. There are, however, many new approaches that are equally or more effective than simply spraying on the same date year after year."

By carefully observing patterns of infestation, IPM researchers have been able to accurately predict when diseases such as apple scab will become most potent. Plant pathologists found, for instance, that this fungus will cause the most serious infections when leaf wetness and temperature reach a certain level.

They watch these factors closely, along with others related to disease growth, and are able to advise farmers when to apply the fungicide.

In 1976, similar methods were used to predict when to spray for European red mites. Because of weather conditions, these insects did not hatch at the time growers usually sprayed.

IPM personnel recommended that farmers wait about two weeks. Those who did greatly reduced the red mite population by spraying only once. On the other hand, farmers who did not follow the advice had to apply insecticide twice.

Perhaps the most bothersome insect to attack New York State apples is the codling moth, which characteristically leaves cavernous tunnels in its wake. This pest has been brought under control by meticulously timing pesticide applications.

The technology necessary to arrive at this precision was developed by IPM chemists and entomologists under Wendell Rolofs, Liberty Hyde Bailey Professor. They used pheromone traps, which can take an accurate census of the moth population.

When the female codling moth is ready to mate, she emits a chemical that attracts the male. This pheromone can be synthesized and placed in traps containing a sticky substance. The male prefers the manufactured sex pheromone to the real thing released by the female.

By using these traps, growers can monitor the presence of the male codling moths and thereby deduce the female population. If the trap is inspected weekly, growers can plan the amount of insecticide to correspond exactly to the threat the pests pose.

Innovations in pest management are constantly sought by IPM researchers. But perhaps the most important aspect of the project is getting the information to the fruit grower. New York State Cooperative Extension has, therefore, developed two programs for this purpose.

Farmers can participate in the Farm Advisor Program at a charge of $12 per acre. Extension advisers work with these growers throughout the year to plan personally tailored pest management strategies. The orchards are closely surveyed for pests as well as the beneficial organisms that feed on them. The weather is monitored, spray equipment is calibrated, and disease and insect detection devices are installed and their results evaluated. "This program represents the ultimate possible in management practice with available technology," Tette says.

Another Extension project seeks to acquaint county agents with pest control information that can be applied to individual growers' problems. The Pest Management Assistant Program employs three assistants who observe selected orchards in the state. The information they receive is transmitted daily by computer to county agents who, in turn, advise fruit growers.

The results of these programs have been encouraging. In many cases, the use of pesticides has decreased and apple production has either remained the same or even increased. One farmer was able to cut his spraying expenses by as much as 44 percent per acre, while increasing the amount of clean fruit from his orchard by 1 percent.

The success of Integrated Pest Management extends far beyond the apple orchard. In New York State, the program now encompasses all tree fruits. Throughout the country, IPM methods developed in as many as 30 states have benefited such crops as alfalfa, potatoes, corn, and soybeans.

IPM also can be applied in urban areas since industries, as well as home gardeners, use pesticides. There is little doubt that overuse of these chemicals could present health hazards. IPM does not do away with such chemical pesticides but provides ways to use them more prudently. Its ultimate contribution may well be assembling and disseminating sufficient knowledge to enable farmers, businessmen, and homeowners alike to make more intelligent and efficient decisions about pest control.

The Department of Education is the only place in New York State where high school agriculture teachers are trained.

Animals Earn Their Keep at the T & R Center

When we buy meat or dairy products at the supermarket, it is second nature to expect plentiful quantities and high quality. It is just as easy, however, to forget the amount of muscle and research that goes into producing these staples of the American diet.

Animal scientists must constantly seek feeds that maintain health and vigor at the lowest possible cost to the farmer. Precise breeding schedules must be developed. Plant breeders must strive to introduce grain varieties that can withstand adverse weather and persistent pests. Moreover, efficient ways of conserving energy and natural resources have to be tested, while soils long abandoned are rediscovered and bothersome, disease-bearing insects are controlled.

Such practical research, and more, is always in progress at the Animal Science Teaching and Research Center of the College of Agriculture and Life Sciences.

"The center is designed to provide space for experimentation in any discipline within the College," says Samuel T. Slack, professor of animal science and center coordinator. "Any department can use it if necessary."

The center was established in 1973 on 2,500 acres of fertile valley and hillside land near Dryden, about 15 miles from the Cornell campus. It now houses some 850 head of dairy cattle, 450 beef cattle, and 900 sheep. About 600 acres of corn are planted and ensiled each year. The same amount of a variety of grasses is also grown and either processed in the same way as the corn or stored dry.

One of the center's newest additions is a 50,000 square-foot "L"-shaped barn that can accommodate up to 600 beef animals. One section of the structure is used primarily to develop feeding systems for beef cattle and to measure the quantity of feed consumed by individual animals.

There is another wing that contains 14 large pens designed for observing growing cattle. By allowing calves to choose from bins that hold different feed combinations, it is possible to learn whether the rations they find the most palatable also induce the best growth. From a control panel in this area, feeds are mechanically mixed and delivered to all parts of the barn.

A 100-acre field adjoining the new structure is used, among other things, to test which grasses, planted singly or in combination, are best for New York State pastures.

In addition to trying to find new feeds that stimulate the highest production, animal scientists at the Teaching and Research Center are experimenting with an old one with an eye toward saving energy.

For almost a century, farmers have been using dried brewer's grains. These by-products of the beer industry have been proven a valuable source of protein for both dairy and beef cattle. They are composed mainly of malted barley, corn, and rice and can replace some feed concentrates, such as corn and soybean meal, as well as some forage. Since beer is such a popular drink, there is no shortage of brewer's grains. In fact, many large breweries have built elaborate systems by which to dry and sell them as commercial feed. They have found a profitable way to dispose of a substance that otherwise would be of no value.

It has been estimated, however, that up to 500,000 BTUs of heat is needed to process 100 pounds of dry brewer's grains. As the cost of energy rises, it is likely that breweries will find this too expensive.

Researchers led by Larry E. Chase, assistant professor of animal science, have been using the Teaching and Research Center as a proving ground for the use of brewer's grains that are left wet, with a water content of up to 80 percent.

"Our biggest concern," says Chase, "is to find out what the farmer needs to do to make wet brewer's grains as much a part of the ration as dry is now."

Using by-products from the Schlitz and Miller breweries in nearby Syracuse, Chase has been including varying amounts of wet grains as part of daily feed rations. He is seeking precise information about how much of the wet feed each animal can consume per day, while determining its true protein and energy value.

"Once we get these factors better defined, breweries will be able to more effectively market wet grains directly to the farmer, saving both money and energy," he comments.

College plant scientists have invented ways to prolong the storage life of many vegetables and fruits, including onions, potatoes, and apples.

The results of Chase's research are not complete, but the outlook is good. When grains are heated during drying, some of their protein is made unavailable to the animal. It is probable, therefore, that wet brewer's grains will be a better source of energy and protein than dry grains.

Ultimately, Chase hopes to develop practical guidelines that farmers can follow to use the feed effectively. If successful, the cattle farmer may not be the only one to benefit. Feed costs could be kept down by using a by-product that requires no processing. This could well mean stable meat and dairy prices, a more efficient use of energy, and possibly less land used for livestock feed and more for the production of food for direct human consumption.